

with a long tube beyond the bifurcate lateral processes. Length, 6-6.5 mm.

Vertex sharp, slightly more than a right angle, disc flat; elytra quite reticulate on outer half.

Color ivory white marked with fuscous and lemon yellow. Vertex and basal two-thirds of clavus lemon yellow; pronotum and scutellum infuscated, band of irregular spots on anterior margin of pronotum darker; corium hyaline with median and apical brown cross bands, also broad brown border to clavus.

Genitalia: Last ventral segment of female about four times as long as preceding, posterior margin broadly bilobed with median notch about one-fourth as deep as length, with prominent median Y-shaped black mark. Male valve almost twice as long as preceding segment, broadly angular; plates narrower at base than valve, extending about half their length beyond pygofer, slightly separated on mesal margin, at base, and more so at tip, medium dorsally curving spine on inner margin at apex; pygofer almost lacking usual spine at tip, apices triangular, turned dorsally, ædeagus in dorsal view broad at base narrowing to outer third, widening into a pair of lateral bifurcate processes, the shorter turning basally, the other apically; duct extending on, much narrowed, with a pair of shorter lateral processes near tip, to end about even with other processes.

Holotype male, allotype female, six male and three female paratypes, Anza, California, July 29, 1938, R. H. Beamer and R. I. Sailer. Swept from *Arctostaphylos pungens* H.B.K.

THE ANOPHELES MACULIPENNIS COMPLEX OF WESTERN AMERICA

(Diptera, Culicidæ)

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Much controversy has been waged as to the exact status of *A. maculipennis* Meig. in North America. Studies carried on by the writer suggest the presence of three subspecies in our fauna. Typical *maculipennis* Meig. is considered not to occur in this country, because *occidentalis* (D.&K.), our only form resembling it in the silvery patch of scales at the wing apex, differs in having non-banded eggs and distinct terminalia. The two remaining forms, *aztecus* Hoff. and *freeborni* new subspecies, have unicolored wings.

Anopheles maculipennis freeborni Aitken, new subspecies

Female. Similar to *maculipennis*¹ except for unicolorous wing scales.

Male terminalia. External claspette spine acute.

Egg. Uniformly dark grey, unbanded, columellæ relatively far apart; floats smooth, 12-13 chambers.

Holotype, male, No. 4889, allotype, female, No. 4890, Calif. Acad. Sci., Ent., and 23 paratypes, "Davis, Calif. XI-6-37. T. Aitken."

Discussion. *Freeborni* differs from the European *maculipennis* complex² (*maculipennis*, *messeæ* Fall., *melanoon* Hack., *subalpinus* Hack. & Lew., *labranchiæ* Fall., *atroparvus* v. Th. and *elutus* Edw.) by its unicolored wings and unspotted eggs (exception *elutus*). In the egg of *elutus* the floats are rudimentary or wanting (cross-lined when present); the columellæ of the chorion (dorsum) in *freeborni* are small with relatively large intervening spaces, giving a dark effect.

The status of *occidentalis* in America has been greatly confused, due to the fact that the type series (U. S. N. M.) is a mixture. It includes at present 78 specimens; 64 (including type, No. 10,028) from Stanford University and one from Portland, Ore., are the true "silver-tipped" *occidentalis*; the others (Thrall and Sisson, Calif.; Portland, Ore.; Revelstoke, B. C.; Boise, Idaho; and Lehi, Utah) are all the unicolored inland form, *freeborni*.

Besides the "silver-tipped" wing, *occidentalis* has an egg similar to that of *freeborni*, but the columellæ are larger and closer together giving the egg a pale grey appearance. *Occidentalis* may have a predilection for impounded water in contrast to the fresh, irrigation water preference of *freeborni*. *Occidentalis* is restricted to a narrow strip along the west coast from the region of San Luis Obispo, Calif., north to the Canadian Northwest Territory and across the continent along the international boundary to New England. *Freeborni* occurs throughout those regions west of the Continental Divide, appearing on the coast in Southern California. *Aztecus*³ is found in the Valley of Mexico. Like *freeborni* it has unicolored wings, but the egg has rough floats with 25 chambers. Its breeding habits appear to be different.

¹Freeborn, S. B., Univ. of Calif. Publ. Ent., 3:448, 1926. (*freeborni* nec *maculipennis*).

²Hackett, L. W., Quart. Bull., Health Org., League of Nations, 6:1-16, 1937.

³Hoffmann, C. C., Anales del Inst. Biol. de Mex., 6:3-22, 1935.